

Serial No. 10/025,156
Art Unit 1762

Amendment B - After Final Action

Remarks:

Responsive to the Official Action made final, mailed March 13, 2003, Applicant respectfully requests reconsideration, reexamination and allowance of claims 1-21 in view of the above amendments and the following remarks.

Applicant acknowledges with thanks Examiner Parker's withdrawal of the previous rejections; however, applicant submits that the claims, as amended are in fact allowable over the cited references even in light of the new rejections.

The Examiner has continued his reliance on Leach, U.S. Patent No. 5,338,578, and has now cited Smith, U.S. Patent No. 5,344,672 as the secondary reference (instead of Andersen, et al., U.S. Patent No. 5,516,551). The Examiner cites Leach stating that:

"Leach teaches powder coating plastic resin substrates comprising steps of: washing/cleaning substrates followed by drying to remove wash water (per claims 2-4) and heating the cleaned article to a temperature to cause degassing at a temperature of at least the melting point of the powder to be applied; powder coating "by any conventional powder coating technique" whereas the powder melts and flows at the surface; and then further heating at elevated temperatures above the powder cure temperature to initiate cross-linking and curing." The Examiner references to col. 4, line 61 to col. 5, line 45 for support of this reading of Leach..

The Examiner cites the Smith reference and characterizes Smith as disclosing "a similar method of coating plastic articles without limitation (encompassing injection molded plastic parts) which is preheated at a temperature to degas the substrate prior to applying a coating powder per column 4, 30-44. Preheating at a temperature to degass the substrate and to allow the subsequently applied powder to melt and flow on the substrate is taught, the degassing step being essential to avoid deleterious popping of the applied coating due to trapped/ absorbed water or other volatiles during powder curing." The Examiner concludes that it would have been obvious to one of ordinary skill to have preheated the substrate of Leach at a sufficient time and temperature to "drive out" water and other volatiles as taught by Smith to provide smooth, plastic coated plastic substrates in which the coating is free of popping defects.

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Applicant has amended the independent claims to more particularly point out that the present invention is directed to a method for powder coating a plastic injection molded article that includes preheating the article to a preheating temperature, substantially completely degassing the article, coating the preheated and degassed article with a polymeric powder coating (which powder coating has a cross-linking temperature that is above the preheating temperature) so that the powder coating softens and adheres to the preheated and degassed article and heating the coated article to cure the powder coating. The article is cured at a curing temperature that is above the preheating and cross-linking temperatures, and between the cross-linking temperature and the melting point temperature of the article.

Unlike the coating method of Leach, the present method includes heating the article (prior to application of the powder) to a point that is less than the cross-linking temperature. That is, the present method specifically provides that the powder coating has a first cross-linking temperature that is above the preheating temperature. At the applied temperature, the powder coating softens and adheres to the pre-heated article but does not begin to cross-link (cure).

The coated article is then further heated (as clearly pointed out in the amended claims) to a temperature at which the powder coating cures.

A careful reading of the Leach patent shows that Leach contemplates that the initial heating of the article is above the cross-linking temperature. Specifically, directing the Examiner's attention to Leach, col. 5, lines 9-13, it is stated that "[t]he powder coating will melt and flow out upon contact with the substrate surface giving a uniform smooth liquid surface. . . ."

As provided at lines 14-17, "[i]n some circumstances, further elevation of the substrate surface may be achieved using a surface heating technique such as infrared absorption or direct thermal convection to the substrate surface." Thus, taken in context these statements all support a reading that the latent heat in the part is such as to elevate the surface temperature to a level that is sufficiently high so as to result in cross-linking of the powder coating. In fact, given that the preheating temperature is provided to be about 150° to about 300° and preferably about 180° to about 250° (col. 4, lines 65-67), and the stated curing temperature is at least 250°F, usually 250°F

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to 375°F and preferably 300°F to 375°F, it is clear that the intent is to use the latent heat of the part, at least in part, to cure the powder coating.

In contrast, the present method does not contemplate that cross-linking begins until after the coating is applied (and adheres to the article), and has subsequently melted out and flowed over the article. Only then is the article heated (i.e., heating to cure) to a temperature sufficient to cross-link (or cure) the powder coating. That is, preheating occurs at a temperature that is less than the melting temperature of the powder coating, and is significantly less than the cross-linking temperature of the powder coating. Using the presently claimed method, until the time that the temperature is increased to cure the powder, only physical changes have occurred to the powder coating, and no cross-linking has occurred. Thus, it is applicant's position that the present method would not have been obvious over Leach in view of Smith because of the functional differences (and thus the differences in steps) between the method of Leach and the claimed method, and the absolute, as well as functional differences of the temperature ranges of Leach compared to the present invention.

Moreover, it has been found that using the present method (because of the lower application temperature and later application of cross-linking temperature) permits recovery of the non-adhered powder. That is, because cross-linking of the powder has not commenced with application (but is later initiated with the increase to a temperature greater than the cross-linking temperature) the powder that does not adhere to the article can be recovered and reused.

This is not the case with the method of Leach. Because of the higher application temperatures, e.g., greater than the cross-linking temperature, the powder cannot be recovered because cross-linking will have begun even in the powder that does not adhere to the part.

Thus, it is applicant's position that differences in curing temperatures are not just obvious variations that reflect either differences in coating material, substrate size and the like, but are in fact functional differences in the overall method (both from a practical standpoint, as well as philosophically in operation). That is, the basic premise of how the claimed method is carried out is so completely contrary to that of Leach, that the differences do in fact patentably

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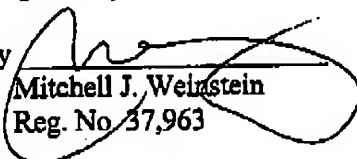
distinguish over the prior art.

In conclusion, applicant respectfully submits that claims 1-21 are in condition for allowance, and such action is earnestly submitted. Applicant believes that there is no fee due in connection with the present Amendment B After Final Action. If, however, there is a fee due, Applicant authorizes the Commissioner to charge any underpayment, or credit any overpayment, to Deposit Account No. 23-0920. A duplicate copy of this sheet is enclosed. Should any petitions be necessary, applicant requests that this paper constitute any such necessary petition.

If the examiner finds that there are any outstanding issues that may be resolved by a telephone interview, the Examiner is invited to contact the undersigned at the below listed number.

Respectfully submitted,

By


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